



Postdoc position (2 years)

## **A bright source of Indistinguishable Polarization-entangled On-Demand photon pairs**

A two-year post-doctoral position is available at Institut Néel (Grenoble, France) in the Quantum Optics group led by Jean-Philippe Poizat. This position is part of the project « A bright source of Indistinguishable Polarization-entangled On-Demand photon pairs » obtained together with the team of Julien Claudon, and Jean-Michel Gérard at CEA-IRIG (Grenoble, France), from the Agence Nationale de la Recherche (ANR).

The goal of this project is to use a single semiconductor quantum dot (QD) embedded in a photonic waveguide to produce polarization entangled photon pairs with a very high quantum efficiency. The specificity of this project is that we will use strain and electrostatic fields to tune the properties of the QD and produce a device satisfying all the requirements for a realistic implementation in a quantum communication set-up.

Together with a PhD student, the post-doc will design and operate the experimental set-up to tune the spectroscopic properties of the QD, carry out resonant photoluminescence experiments and perform the entanglement measurements. This work will be done in very close collaboration with a PhD student and a post-doc of the CEA-IRIG team that will be in charge of the design and fabrication of the samples.

**Responsibilities and tasks:** The successful candidate will be in charge of:

- Resonant two-photon micro-photoluminescence experiment
- Entanglement characterization with photon correlations
- the co-supervision of a PhD student.

**Means available:** The Institut Néel team operates a state of the art low temperature ( $T=4\text{K}$ ) resonant micro-photoluminescence set-up including a picosecond Ti:sapph laser, several tunable laser diodes, a high resolution ( $12\ \mu\text{eV}$ ) spectrometer with a CCD camera, avalanche photodiodes, and photon correlation software.

**Research team:** The Institut Néel team is specialized in quantum optics and optomechanics with semiconductor nanostructures. It has obtained several important results in photon correlation experiments, giant non-linearities, and single photon experiments with quantum dots.

[Web site](#)

**Profile of the candidate:** We are looking for a highly motivated post-doc with strong background in semiconductor optics and/or quantum optics. She/he must be able to supervise a PhD student and to conduct an experimental project with large autonomy. Work with Institut Néel technical staff and with our CEA-IRIG collaborators will require a strong team spirit.

**Environment:** Institut Néel is one of the largest French national research institutes in condensed matter physics. Grenoble features a unique scientific, industrial and cultural ecosystem. It offers one of Europe's largest high-tech center. Grenoble has been identified as one of the three French Quantum Hubs together with Paris and Saclay. It benefits from an exceptional environment at the heart of the French Alps.

**Start date:** Beginning of 2021.

**Duration:** 2 years.

**Salary:** Between 1900 to 2300 €/month after tax depending on experience.

**More information:** [jean-philippe.poizat@neel.cnrs.fr](mailto:jean-philippe.poizat@neel.cnrs.fr)

**How to apply:** Send a CV and a motivation [jean-philippe.poizat@neel.cnrs.fr](mailto:jean-philippe.poizat@neel.cnrs.fr). Please arrange for two references.

**Application deadline:** until position is filled.